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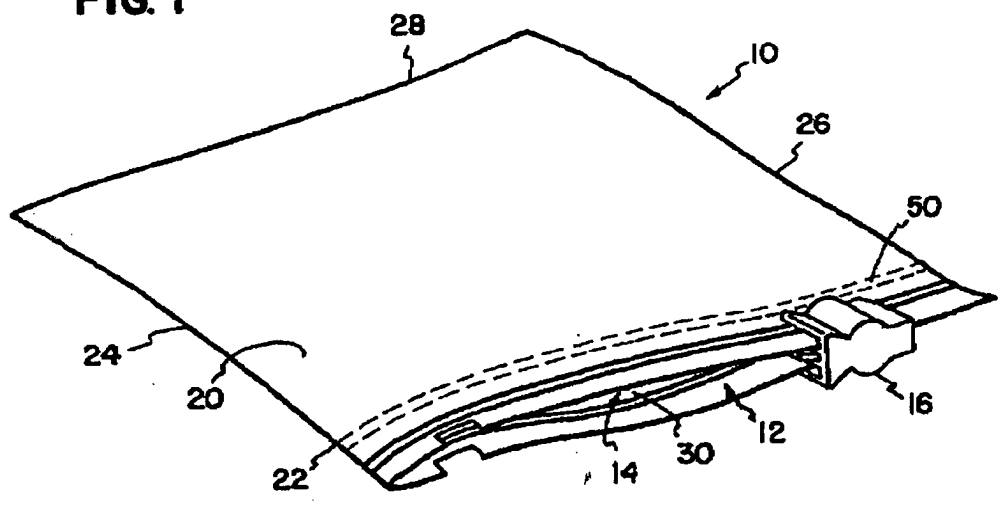
(54) Package with a zipper closure arrangement operable by a slider device and having a peelable seal

(57) A flexible package (10) includes a recloseable zipper closure (11) along the mouth of the package for selective opening and closing of the mouth. The zipper closure includes first and second closure profiles (12,14), which are configured and constructed to selectively interlock. A slider device (16) is configured and constructed to facilitate the mating (closing) and unmating (opening) of the zipper closure. A tamper evident peelable seal (50) is provided between the zipper closure and the interior (25) of the bag to indicate whether or not an attempt has been made to access the interior of the package. The peelable seal can extend between the package walls, one package wall and one closure profile, or between first and second closure profiles.

FIG. 1



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Description

Field of the Disclosure

[0001] The present disclosure generally relates to closure arrangements for packages. In particular, the present disclosure relates to closure arrangements having recloseable profiles and slider devices to open and close the profiles.

Background

[0002] Many packaging applications use resealable containers to store various types of articles and materials. These packages may be used to store and ship food products, non-food consumer goods, medical supplies, waste materials, and many other articles. Slider devices have been used to help open and close closure profiles on recloseable and/or resealable bags and other packages.

[0003] Resealable packages are convenient in that they can be closed and resealed after the initial opening to preserve the enclosed contents. The need to locate a storage container for the unused portion of the products in the package is thus avoided. As such, providing products in resealable packages appreciably enhances the marketability of those products.

[0004] Some perishable goods are sold to consumers already packaged in a recloseable package. For example, cheese, meat or vegetable products can be packaged in a bag with recloseable closure profiles so that after opening the package, it can be re-closed. Often these packages include tamper evident features to inform the consumer whether the package previously has been opened. Because of the construction of these packages with recloseable closure profiles, it has been difficult to place tamper evident features on bags or packages that include a slider device to help open and close the recloseable closure profiles.

[0005] Improvements in packaging, that includes tamper evident features and easily recloseable seals, are desirable.

Summary of the Disclosure

[0006] The present disclosure relates to a package, such as a flexible bag, having a combination of a resealable, recloseable zipper closure mechanism and a tamper evident peelable seal. Opening and closing of the zipper closure mechanism is accomplished by a slider device mounted on the zipper closure mechanism. The slider device facilitates mating and unmating of the first and second profile members of the zipper closure. A peelable seal is positioned on the package between the zipper closure mechanism and the package interior. Access to the interior of the package interior, and any items packaged therein, cannot be gained until the zipper closure has been opened and the tamper evident peelable seal has been opened.

[0007] In particular, a package with a surrounding wall defining an interior and with a mouth is disclosed; the mouth providing access to said package interior. A recloseable zipper closure having first and second interlockable closure profiles is positioned along the mouth for selective opening and closing of the mouth. A slider device is mounted on the zipper closure and is configured and constructed to selectively interlock and disengage the first and second closure profiles so as to open and close the zipper closure. A peelable seal is positioned between the recloseable zipper closure and the package interior, so as to deny access to the package interior until the peelable seal is broken. A method of opening a package is also provided.

Brief Description of the Drawings

[0008]

FIG. 1 is a perspective view of a flexible, recloseable package;

FIG. 2 is a schematic, cross-sectional view of the flexible, recloseable package depicted in FIG. 1 having a peelable seal;

FIG. 3 is a schematic, cross-sectional view of a zipper closure arrangement useable in recloseable packages depicted in FIGS. 1 and 2;

FIG. 4 is an enlarged, schematic, cross-sectional fragment of a flexible package having a further embodiment of a peelable seal;

FIG. 5 is an enlarged, schematic cross-sectional fragment of a flexible package having another embodiment of a peelable seal; and

FIG. 6 is an enlarged, schematic cross -sectional fragment of a flexible package having yet another embodiment of a peelable seal.

Detailed Description

[0009] Attention is directed to FIGS. 1 and 2, which illustrate an example of a packaging arrangement in the form of a resealable, flexible package 10 having a zipper closure 11 with first and second closure profiles 12, 14 and a slider device 16 to open and close (mate and unmate) the profiles 12, 14.

[0010] The flexible package 10 includes first and second opposed panel sections 20, 22 made from flexible, polymeric film. For some manufacturing applications, the first and second panel sections 20, 22 are heat-sealed together along two edges 24, 26 (FIG. 1) and meet at a fold line in order to form a three-edged containment section for a product within the interior 25 (FIG. 2) of the package 10. The fold line comprises the bottom edge 28. Alternatively, two separate panel sections 20, 22 of polymeric film may be used and heat-scaled together along the two edges 24, 26 and at the bottom edge 28. The package 10 may include pleats to allow

expansion of package 10 in width; a pleat in the bottom is commonly referred to as a "bottom gusset". Access is provided to the interior 25 of the package 10 through a mouth 30 (FIG. 1). By "interior", it is meant the inner volume of the package configured and constructed to hold items. The "interior" of the package is defined by the inner surfaces 20a, 22a of first and second panel sections 20, 22 and by a permanent bottom seal, for example bottom edge 28.

[0011] The zipper closure 11 may be selected from a variety of configurations and structures. For example, the zipper closure 11 can be constructed according to U.S. Patent Nos. 4,240,241; 4,246,288; or 4,437,293; each of which is incorporated by reference herein,

[0012] In the particular zipper closure 11 shown in FIG. 3, the zipper closure 11 has first and second closure profiles 12, 14 in the form of a first profile member 32 and second profile member 34. A first depending fin or flange 42 extends from first profile member 32, and a second depending fin or flange 44 extends from second profile member 34. If the zipper closure 11 is formed separately from the panel sections 20, 22 (FIG. 1), the first and second fins 42, 44 are attached, typically thermally fused, to inner surfaces 20a, 22a of the respective first and second panel sections 20, 22. Thermally fusing typically refers to the application of pressure and heat either or both of the panel sections 20, 22 and fins 42, 44. Alternatively, the zipper closure 11 may be extruded with the panel sections 20, 22 such that the first fin 42 is integrally formed with the first panel section 20, and the second fin 44 is integrally formed with the second panel section 22.

[0013] Referring again to FIGS. 1 and 2, slider device 16, mounted on zipper closure 11, engages and disengages first and second closure profiles 12, 14. Slider device 16 functions by facilitating the mating, engaging or interlocking (closing) and unmating (opening) of zipper closure 11, and is typically made from a molded plastic material. When slider device 16 is slid in a first direction along zipper closure 11, slider device 16 closes closure profiles 12, 14 by pressing the two profiles 12, 14, in particular, first profile member 32 and second profile member 34 (illustrated in FIG. 3) together so that they mate, providing a seal. When slider device 16 is slid in the opposite second direction, slider device 16 opens profiles 12, 14 by providing a wedge between the two profiles 12, 14. First and second closure profiles 12, 14 can then be spread apart to provide access to the package interior through mouth 30. Slider devices and how they function to open and close zipper closures, in general, are taught, for example, in U.S. Patent Nos. 5,063,644; 5,301,394; 5,442,837, and 5,664,229, each of which is incorporated by reference herein. A preferred slider device is taught in U.S. patent applications 09/365,215 and 29/108,657, both filed July 30, 1999 and incorporated herein by reference in their entirety.

[0014] A tamper evident peelable seal is provided between zipper closure 11 and package interior 25; the tamper evident seal provides evidence whether or not the recloseable package 10 has been previously opened. By "tamper evident", it is meant that an attempt to breach the integrity of a seal is evidenced or shown by a distortion or destruction of the seal. By "peelable", it is meant that the bonding strength between the layers forming the peelable seal is less than the bonding strength of other layers in the package 10, so that when a pulling force is applied, the layers forming the peelable seal will break or peel apart before other portions of package 10. FIG. 2 illustrates a peelable seal 50 in package 10 configured and constructed to protect the interior 25 of package 10. FIGS. 4, 5 and 6 illustrate specific examples of tamper evident peelable seals 50 as peelable seals 450, 550, 650, respectively, in packages 410, 510, 610, respectively. It will be appreciated that when peelable seal 50 is undisturbed (that is, seal 50 has not been opened or otherwise breached), access cannot be gained to the package interior 25 (FIG. 2).

[0015] Referring still to FIG. 2, peelable seal 50 is positioned between zipper closure 11 and package interior 25 and provides a seal that does not allow access to interior 25 of package 10 unless peelable seal 50 is opened. A cavity 15 may be created between peelable seal 50 and zipper closure 11, depending on the structure and position of peelable seal 50. It will be appreciated that cavity 15 is not the intended receptacle for items to be stored within package 10.

[0016] It is possible to release first closure profile 12 from second closure profile 14 (i.e., open or unzip the zipper closure 11), however, peelable seal 50 will remain intact and retain the security of the contents of the package 10 by not permitting package 10 to be opened and access gained to the interior 25. Preferably, peelable seal 50 extends the entire width of package 10; that is, from edge 24 to edge 26 (FIG. 1), or at least the entire length of zipper closure 11.

[0017] Peelable seals are known in the packaging art, and examples of peelable seals that may be useable with the package of the present disclosure are taught in U.S. Patent Nos. 4,923,309; 4,925,316; 5,425,825; 5,456,928; 5,470,156; and 5,733,636 the disclosures of which are incorporated herein by reference. There are many general methods for providing peelable seals on a package 10 having first and second panel sections 20, 22. One approach is to provide a thin bead or layer of adhesive between panel section 20 and 22; the bonding strength of the adhesive to the interior surfaces 20a, 22a is less than the tearing strength of panels 20, 22. Another approach is to adhere a multilayered film to each of interior surfaces 20a, 22a along the width of package 10 below zipper closure 11. This results in a first multilayered film on the interior surface 20a of the first panel section 20 and a second multilayered film on the interior surface 22a of the second panel section 22. A peelable seal 50 is formed by sealing, such as heat sealing, the first and second multilayered films to one another. Another approach is to adhere a layer of film to each of

interior surfaces 20a, 22a or fins 42, 44 and to introduce a contaminant to one or both of the film layers. When the peelable seal 50 is formed by heat sealing the layers to one another, the bond between them is weak due to the surface contamination. All of these peelable seals are broken or otherwise breached by separating first and second panel sections 20, 22.

[0018] Peelable seal 50, no matter how constructed or applied, should provide a seal across the width of package 10, or at least along the length of zipper closure 11, so that any tampering, vandalism, mutilation, or other attempts to access interior 25 are readily discernible. When broken, peelable seal 50 may exhibit distortion, a color change, the emergence of graphics or the like, or may have an inability to reseal. Specific examples of various embodiments of a peelable seal 50 will now be described in reference to FIGS. 4, 5 and 6.

[0019] FIG. 4 illustrates a package 410 having a zipper closure 411 with first and second closure profiles 412, 414. Although not shown in FIG. 4, a slider device is used to engage and disengage first and second closure profiles 412, 414. First panel section 420 is thermally fused to first closure profile 412 and sealant strip 426, and second panel section 422 is thermally fused to second closure profile 414 at preselected locations.

[0020] Package 410 further includes peelable seal 50, in particular a peelable seal 450 having a T-shaped peelable strip 424 and a sealant strip 426, that seals the access to package interior 425. Peelable seal 450 provides a peelable feature to package 410 at the location 428. The T-shaped peelable strip 424 is composed of peelable material and includes a top portion 432 and a stem portion 434. The stem portion 434 is integrally formed with the top portion 432 and extends perpendicular to the center of the top portion 432. Non-sealable strips 421, 423 are positioned parallel to each other and are spaced from each other so as to form a gap 430 between strips 421, 23 and stem portion 434 of T-shaped peelable strip 424. The stem portion 434 projects into a gap 430 between the non-sealable strips 421, 423, and the base of the stem portion 434 is attached to the inner surface of the second closure profile 414. The sealant strip 426 is composed of low-temperature sealant material and is firmly attached to the outer (left) surface of the top portion 432 of the peelable strip 424. Since the sealant strip 426 bonds readily to other materials at low temperatures, the sealant strip 426 acts as a bridge for attaching the first panel section 420 to the top portion 432 of the peelable strip 424. Alternatively, the first panel section 420 may be thermally fused directly to the top portion 432 of the peelable strip 424 by use of higher temperatures, greater pressure and/or greater dwell time during the heat sealing process.

[0021] FIG. 5 illustrates a package 510 with a zipper closure 511 having first and second closure profiles 512, 514. Although not shown in FIG. 5, a slider device is used to engage and disengage first and second closure profiles 512, 514. Package 510 further includes a peelable seal 50, in particular a peelable seal 550 having peelable bands 566, 568 with each pair of peelable bands attached to each other to form individual peelable seals therebetween, to seal access to the package interior 525. Non-sealable strips 560, 562, 564 surround the peelable bands 566, 568, Therefore, one peelable seal is formed between the pair of peelable bands 566, and another peelable seal is formed between the pair of peelable bands 568.

[0022] The strength of the combined peelahle seal is determined by the width of the peelable bands 566, 568, the number of pairs of peelable bands 566, 568, and the material composition of the peelable bands 566, 568. The first and second panel sections 520, 522 that form the structure of package 510 are thermally fused to the respective fins 542, 544 of first and second closure profiles 512, 514 and simultaneously, each member of the pairs of peelable bands 566, 568 is fused to each other. This fusion of opposing peelable bands 556, 568 creates the individual peelable seals. The pairs of non-sealable strips 560, 562, 564 surrounding peelable bands 556, 568 are composed of non-sealable material, and thus do not fuse together.

[0023] FIG. 6 illustrates yet another embodiment of a package 610 having a zipper closure 611 with engageable first and second closure profiles 612, 614. Although not shown in FIG. 6, a slider device is used to engage and disengage first and second closure profiles 612, 614. Peelable seal 50, in particular peelable seal 650, seals access to package interior 625. The peelable seal 650 includes a flat peelable strip 690 attached to one of first and second closure profiles 612, 614; here, peelable strip 690 is attached to second closure profile 614. First panel section 620 is thermally fused to both first closure profile 612 and to the peelable strip 690. To accommodate the peelable strip 690, the second closure profile 614, in particular second fin 644, is longer than first closure profile 612 and first fin 642. Due to this relatively large difference of the fin strip length, the second panel section 622 is thermally fused to the second fin 644 at multiple locations to provide a firm attachment therebetween. One surface of the peelable strip 690 is firmly attached to the second closure profile 614, for example by co-extruding the peelable strip 690 with the second closure profile 614 with second fin 644. If desired, a sealant strip may be interposed between the peelable strip 690 and the second fin 644. This sealant strip, however, is not necessary to provide an effective bond between the peelable strip 690 and the second closure profile 614. As illustrated in FIG. 6, the opposite surface of the peelable strip 690 is attached to the first panel section 620 to form a peelable seal 650.

[0024] Further details regarding various embodiments of peelable seals are taught in U.S. Patent Nos. 4,923,309; 4,925,316; 5,425,825; 5,456,928; 5,470,156; and 5,733,636.

[0025] When flexible package 10 (or any other package such as 410, 510, 610) having zipper closure 11

operable by slider 16, is ready to be opened by the purchaser of the package, slider device 16 is moved from a first position to a second position, so that slider device disengages first closure profile 12 from second closure profile 14 and opens zipper closure 11. This action will expose any cavity 15 and peelable seal 50. To gain access to the items stored in package interior 25, peelable seal 50 must be broken. To break or otherwise open peelable seal 50, first closure profile 12 and second closure profile 14 of zipper closure 11 are grasped and separated. This action of forcing the two closure profiles 12, 14 and the attached panel sections 20, 22 apart should break or otherwise breach peelable seal 50. After peelable seal 50 has been opened, access can be gained to the interior 25 of package 10.

[0026] When package 10 is resealed by closing zipper closure 11, peelable seal 50 does not return to its undistorted or undamaged state; rather, peelable seal 50 evidences that the seal to the package interior 25 has been breached.

[0027] The above specification and examples are believed to provide a complete description of the manufacture and use of particular embodiments of the disclosure. Many embodiments of the disclosure can be made.

Claims

1. A package comprising:

   (a) a package surrounding wall defining an interior and having a mouth; said mouth providing access to said package interior;
   (b) a recloseable zipper closure along said mouth for selective opening and closing of said mouth; said zipper closure including first and second closure profiles;
   (i) said first and second closure profiles configured and constructed to selectively interlock;
   (c) a slider device mounted on said zipper closure, said slider device configured and constructed to selectively interlock and disengage said first and second closure profiles; and
   (d) a peelable seal attached to said surrounding wall and positioned between said recloseable zipper closure and said interior.

2. The package according to claim 1, wherein:
   (a) said surrounding wall comprises a first panel and a second panel.

3. The package according to any of claims 1 and 2, wherein:

   (a) said package has a first edge and a second opposite edge, and a width between said first edge and said second edge;
   (b) said zipper closure extending said width of said package.

4. The package according to claim 3, wherein:
   (a) said peelable seal extends said width of said package.

5. The package according to any of claims 2-4, wherein:
   (a) said peelable seal extends from said first panel to said second panel.

6. The package according to any of claims 2-5, wherein:

   (a) said first closure profile comprises a first fin and a first profile member, said first fin extending from said first profile member; and
   (b) said peelable seal extends from said first panel to said first fin.

7. The package according to any of claims 2-6, wherein:

   (a) said first closure profile comprises a first fin and a first profile member, said first fin extending from said first profile member;
   (b) said second closure profile comprises a second fin and a second profile member, said second fin extending from said second profile member; and
   (c) said peelable seal extends from said first fin to said second fin.

8. The package according to any of claims 1-7, wherein said peelable seal comprises:

   (a) a first sealant strip; and
   (a) a second sealant strip.

9. The package according to claim 8, wherein:

   (a) said first sealant strip comprises a multilayered film; and
   (b) said second sealant strip comprises a multilayered film.

10. The package according to claim 8, wherein:
    (a) one of said first sealant strip and said second sealant strip is a T-shaped peelable strip.

11. The package according to claim 8, wherein:
    (a) at least one of said first sealant strip and said second sealant strip comprises alternating peelable strop and non-sealable strips.

12. A method of opening a package according to any of claims 1-11, the method comprising:

(a) moving the slider device along the zipper closure to open the zipper closure;
(b) spreading the first closure profile and the second closure profile;
(c) breaking the peelable seal in order to gain access to the interior.

13. The method according to claim 12, wherein said step of spreading the first closure profile and the second closure profile comprises:
(a) spreading the first side panel and the second side panel.

14. The method according to claim 12, wherein said step of breaking the peelable seal in order to gain access to the interior comprises:
(a) breaking the peelable seal at an interface between a first sealant layer and a second sealant layer.

15. The method according to claim 12, wherein said step of breaking the peelable seal in order to gain access to the interior comprises:
(a) breaking the peelable seal at an interface between a first sealant layer and the second side panel.

16. The method according to claim 12, wherein said step of breaking the peelable seal in order to gain access to the interior comprises:
(a) breaking the peelable seal at an interface between a first sealant layer and a second fin extending from the second closure profile.

17. A method of making a package according to any of claims 1-11, the method comprising:

(a) forming the surrounding wall having the mouth;
(b) attaching the zipper closure to the surrounding wall at the mouth;
(c) mounting the slider device onto the zipper closure to operably open and close the zipper closure; and
(d) providing a peelable seal between the zipper closure and the interior.

18. The method according to claim 17, wherein said step of providing a peelable seal between the zipper closure and the interior comprises:

(a) applying a first sealant layer to a first wall of the surrounding wall;
(b) applying a second sealant layer to a second wall of the surrounding wall; and
(c) sealing the first sealant layer to the second sealant layer.

19. The method according to claim 17, wherein the step of providing a peelable seal between the zipper closure and the interior is done prior to attaching the zipper closure to the surrounding wall at the mouth.

20. The method according to claim 17, wherein said step of mounting the slider device onto the zipper closure to operably open and close the zipper closure is done prior to attaching the zipper closure to the surrounding wall at the mouth.

FIG. 2

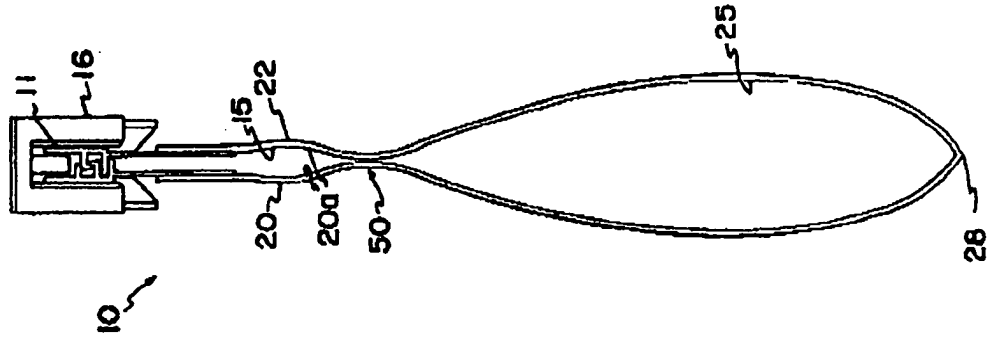

FIG. 1

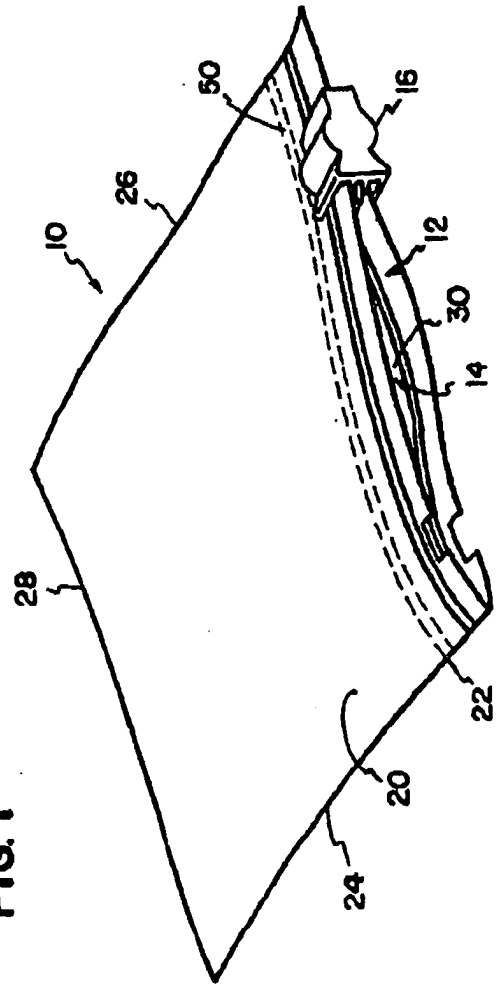

FIG. 3

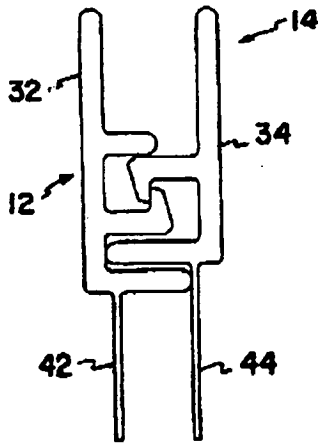

FIG. 6

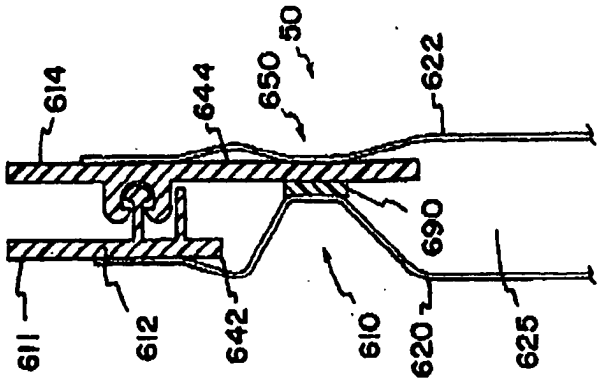

FIG. 5

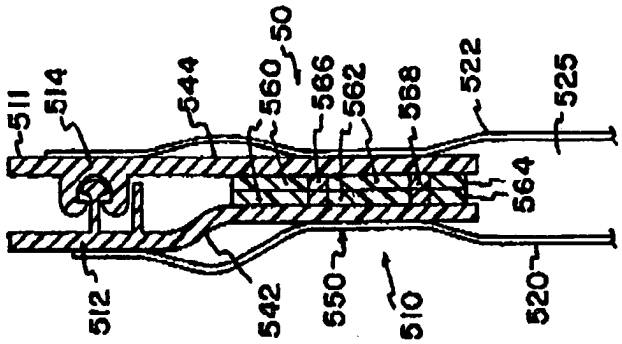

FIG. 4